SECTION 3.3: SOCIOECONOMICS AND POWER RESOURCES

This section discusses the potential effects that the alternatives considered in Chapter 2 would have on the socioeconomic resources of the DMC Unit. Methods of analysis are described below.

AFFECTED ENVIRONMENT

Socioeconomic analyses are composed of two primary types of analyses. Regional economics looks at changes to the income and employment levels of the project area. Social analyses look at changes to the demographic or social makeup and well-being of the project area.

Renewal of the long-term water service contracts could potentially affect the following economic and social resources:

- Regional income
- Regional employment
- Regional population
- Area demographics

The project area includes the geographic service areas of the 20 CVP water contractors within the DMC Unit, as described previously in Section 3.1. The contractor service areas all run roughly along the Interstate 5/California Aqueduct corridor from the City of Tracy in San Joaquin County in the north, through parts of Stanislaus and Merced Counties, to the northern portion of Fresno County, just south of Highway 180 to the south.

When the economic modeling for this analysis was conducted, income and employment information by county was available from the U.S. Department of Commerce, Bureau of Economic Analysis website by industry for 1998. In terms of both earnings (as measured by wages and proprietor earnings) and employment, the largest industries in San Joaquin, Stanislaus, Merced, and Fresno Counties were retail trade, manufacturing, and government. Total earnings by major industry for each of the four counties are shown in Table 3.3-1. Total employment by major industry for each of the four counties is shown in Table 3.3-2.

Table 3.3-1
1998 Total Earnings by Industry by County[1]
(thousands of dollars)

Industry	County			
	San Joaquin	**Stanislaus**	**Merced**	**Fresno**
Farm Income[2]	$327,146	$351,101	$317,439	$554,061
Ag. Services, Forestry & Fishing	143,300	–[3]	90,821	581,149
Mining	12,578	–[3]	888	14,431
Construction	482,184	382,571	95,963	668,436
Manufacturing	975,178	1,099,685	383,958	1,006,513
Transportation & Public Utilities	655,342	341,005	134,501	651,665
Wholesale Trade	389,369	272,639	71,671	616,834
Retail Trade	757,576	625,731	227,704	1,067,575
Finance, Insurance & Real Estate	473,146	239,403	79,922	702,235
Services	1,556,828	1,313,887	357,590	2,578,764
Government	1,393,704	950,288	418,045	2,203,822
Total	$**7,166,351**	$**5,715,861**	$**2,178,502**	$**10,645,485**

Source: U.S. Department of Commerce 1998a.
[1]Includes wages, other labor income, and proprietor income.
[2]Farm income consists of proprietors' income; the cash wages, pay-in-kind, and other labor income of hired farm workers; and the salaries of officers of corporate farms.
[3]Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the total.

Table 3.3-2
1998 Total Employment by Industry by County[1]

Industry	County			
	San Joaquin	**Stanislaus**	**Merced**	**Fresno**
Farm Employment	17,097	14,591	12,086	34,620
Ag. Services, Forestry & Fishing	9,019	–[2]	4,798	41,266
Mining	231	–[2]	52	456
Construction	12,457	11,482	3,074	19,202
Manufacturing	24,259	27,870	13,012	28,847
Transportation & Public Utilities	14,399	7,150	3,597	15,633
Wholesale Trade	10,124	7,400	2,162	16,654
Retail Trade	40,824	36,143	13,439	60,941
Finance, Insurance & Real Estate	16,800	10,748	4,161	25,906
Services	63,495	51,209	15,353	98,520
Government	34,714	24,152	12,506	56,770
Total	**243,689**	**201,613**	**84,240**	**398,815**

Source: U.S. Department of Commerce 1998b.
[1]Includes full-time labor, part-time labor, and proprietor employment.
[2]Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the total.

Agriculture is also a very important industry. If taken together, the farm and agricultural service sectors are particularly important to Fresno and Merced Counties. Agriculture takes on additional significance because it is generally considered a "primary" industry (along with mining and manufacturing). A reasonably large portion of activity in non-primary industries can be attributed to support for primary industry activity in an area. Changes in primary industry activity, therefore, usually precipitate additional changes in non-primary, or support, industries.

Population data can be most closely related to the project area by aggregating individual census tract information. Population and ethnicity breakdowns were available by census tract for 1990, the most recent reported census supporting economic modeling. The California Department of Finance develops population and ethnicity estimates and projections at the county level. Implied growth rates from the California Department of Finance's county estimates were applied to the 1990 tract information to generate estimates and projections from 1990 through 2026 for the aggregated tracts. The following census tracts were used to simulate the DMC Unit's service area.

Fresno County:	Tracts 39, 82, 84.01, 84.02
Merced County:	Tracts 20, 21.98
Stanislaus County:	Tracts 32, 33.98, 34.98, 35
San Joaquin County:	Tracts 52.02, 52.03, 52.04, 52.05, 53.02, 53.03, 53.05, 53.06, 54.02, 55

Table 3.3-3 shows the estimated and projected population and ethnicity in the DMC Unit service area. As shown in Table 3.3-3, the Hispanic community makes up a large proportion of the regional population. It is estimated that over 40 percent of the regional population is identified as Hispanic in 2001 and that the percentage will rise to over 50 percent by 2026.

In addition to the information provided above, regional income, employment, and population can be impacted by changes to the availability, cost, or profitability of agricultural resources, recreational resources, power resources, and M&I water resources. Agricultural and recreational resources are discussed in their own sections within this chapter and the reader is referred to those sections for a review of the affected environment of those resources.

Table 3.3-3
Population and Ethnicity–Delta-Mendota Canal Unit Project Area[1]

Year	Population				
	White	Black	Other	Hispanic[2]	Total[3]
1990	69,542	2,257	21,885	35,995	93,684
1995	72,173	2,504	28,136	42,177	102,777
2000	75,774	2,802	33,601	48,500	112,883
2005	80,395	3,142	41,109	56,592	125,813
2010	85,226	3,531	47,514	65,062	139,339
2015	89,462	3,992	53,488	73,896	152,634
2020	93,940	4,417	60,688	85,069	167,985
2026	97,300	4,863	68,221	97,246	184,078

Source: U.S. Census Bureau 1990.
[1]Estimated and extrapolated from aggregated census tract data.
[2]Hispanic population is also counted as White, Black, or Other.
[3]Equals the sum of White, Black, and Other.

ENVIRONMENTAL CONSEQUENCES

This section describes the environmental impacts of the action alternatives as compared to the No-Action Alternative. Impacts are identified by comparing program components of each action alternative to the No-Action Alternative. The project alternatives are described more fully in Chapter 2.

NO-ACTION ALTERNATIVE

The No-Action Alternative provides a base condition for comparing the action alternatives and represents future conditions at a projected level of development without implementation of either action alternative. The No-Action Alternative reflects the conditions that are expected to be present upon implementation of the Preferred Alternative from the CVPIA PEIS.

Under No-Action Alternative conditions, population and ethnicity projections are equal to the 2026 projections shown in Table 3.3-3. It is assumed that relative income and employment levels would not differ substantially from existing conditions, if adjusted for inflation. Agricultural and recreational resources under No-Action Alternative conditions are described in their respective sections.

It is expected that the CVP will continue to provide an important power resource to municipalities and utility districts in the DMC Unit project area. M&I water deliveries would continue to be provided from the CVP. Under average water conditions under the No-Action Alternative, the model simulation indicated that 704,000 acre-feet of water is expected to be supplied to M&I users in the San Joaquin River region (CH2M Hill 2000,

Table 22). This water includes surface water under water rights (such as used in portions of the cities of Modesto and Stockton) and CVP and SWP water (such as used in portions of the city of Tracy and in Kern County). This value does not include groundwater used by the municipalities. Under dry year conditions, the model simulation indicated that the overall available water from these sources would be reduced to 656,000 acre-feet of M&I water (CH2M Hill 2000, Table 22). The reduction is due only to changes in CVP and SWP water availability because the model assumed that full amounts of surface water rights would be delivered in all water year types.

ALTERNATIVE 1

Alternative 1 involves a tiered pricing program that is based on the full current contract amount of water. Socioeconomic resource use resulting from this alternative is assumed to be similar to the No-Action Alternative because, as described in Table 2-1, the amount of water delivered, the timing of those deliveries, and the rates and method of payment for water delivered under Alternative 1 would not substantially differ from the No-Action Alternative.

ALTERNATIVE 2

Alternative 2 involves the application of a tiered pricing structure that is based on a rolling five-year average of actual water deliveries, rather than the current contract amount of water. A more thorough description of the tiered pricing structure used is found in the description of Alternative 2 in Section 3.2, Agriculture. As noted in Section 3.2, the tiered pricing structure and the No-Action Alternative rates against which it is compared are used because current law requires the adoption of tiered pricing structures.

A regional economic analysis for four different regions was developed in the April 24, 2000 Technical Memorandum (CH2M Hill 2000), which is included as Appendix A. The region used for this assessment is the San Joaquin River region. The DMC Unit is included within the San Joaquin River region. Impacts to this region may overstate the impacts to the DMC Unit service area because the region encompasses a geographic area that includes, but is larger than, the DMC Unit service area.

The regional economic analysis identifies long-term direct and indirect income and employment impacts that would be expected to result from the implementation of Alternative 2. Direct impacts result from changes in agricultural production and profitability and from changes in the cost of M&I water. Had there been any changes in the cost or delivery of CVP power or impacts to recreational resources, such impacts would also have been direct. Indirect impacts are those impacts to the regional economy that occur to other economic sectors (e.g., trade, services, manufacturing) because of the direct impacts.

As noted above, there would be no impacts to recreational resources or power resources because CVP facilities are required to be operated in the same manner, no matter how much agricultural or M&I water is actually diverted for use. Reservoir levels will be similar and conveyance facilities will continue to have similar water flows. This would allow recreational resources to continue to be used at similar levels. It also would allow CVP hydroelectric facilities to operate at the same level, maintaining the same production and price levels that would be seen under the CVPIA PEIS Preferred Alternative (No-Action Alternative conditions).

The M&I water use economics analysis developed in the April 24, 2000 Technical Memorandum (CH2M Hill 2000) assumes that M&I users can afford the calculated water costs that are described in the CVPIA PEIS. Therefore, CVP water deliveries do not change for the M&I analysis. Additional costs for M&I water are incurred, however. In an average water year, additional costs of $5.2 million are incurred under Alternative 2 (in the entire San Joaquin River region). In a dry water year, no additional costs are incurred under Alternative 2.

Since the input-output model used in the regional economic analysis developed in the April 24, 2000 Technical Memorandum (CH2M Hill 2000) assumes that a long-run equilibrium is reached, it is only appropriate to compare Alternative 2 impacts to average No-Action Alternative conditions. In addition, the only hydrologic sequence that truly reflects long-run conditions is the five-year average followed by an average year. The five-year dry period followed by an average year is also examined because, while it is not strictly a long-run scenario, some regions can be permanently impacted by a five-year series of drought years. Because of this, the results can be considered long-term.

Under the average-average hydrologic sequence discussed in Section 3.2, Agriculture, total employment decreases by 120 jobs and income from profits and wages decreases by $4.2 million. Table 3.3-4 shows the direct and total (direct plus indirect) regional economic impacts to the San Joaquin River region under the average-average hydrologic sequence.

Under the dry-average hydrologic sequence, total employment decreases by 420 jobs and income from profits and wages decreases by $12.4 million. Table 3.3-5 shows the direct and total (direct plus indirect) regional economic impacts to the San Joaquin River region under the dry-average hydrologic sequence.

Table 3.3-4
Regional Economic Impacts on All Sectors for the Average-Average Hydrologic Sequence Compared to the No-Action Alternative Average Conditions–San Joaquin River Region

Impact Resulting From:	Employment (number of jobs)		Income[1] (millions of $)	
	Direct	Total	Direct	Total
Change in Agricultural Output	0	0	-$0.1	-$0.2
Change in Agricultural Net Income	20	40	$0.5	$1.0
Change in M&I Water Costs	-80	-150	-$206.0	-$5.1
Total[2]	**-60**	**-120**	**-$2.2**	**-$4.2**

Source: CH2M Hill 2000, Table 23.
[1]Includes income from wages and profits.
[2]May differ from sum of elements because of rounding.

Table 3.3-5
Regional Economic Impacts on All Sectors for the Dry-Average Hydrologic Sequence Compared to the No-Action Alternative Average Conditions–San Joaquin River Region

Impact Resulting From:	Employment (number of jobs)		Income[1] (millions of $)	
	Direct	Total	Direct	Total
Change in Agricultural Output	-10	-20	-$0.3	-$0.7
Change in Agricultural Net Income	-140	-240	-$3.0	-$6.5
Change in M&I Water Costs	-80	-150	$0.0	$0.0
Total[2]	**-230**	**-420**	**-$5.9**	**-$12.4**

Source: CH2M Hill 2000, Table 27.
[1]Includes income from wages and profits.
[2]May differ from sum of elements because of rounding.

Population impacts can be expected to occur as a result of the implementation of Alternative 2. The key drivers in determining changes in population are birth rates, death rates, and employment. Alternative 2 will not precipitate any changes in birth or death rates, but as shown in Tables 3.3-4 and 3.3-5, employment impacts will occur.

If we assume the same ratio of employment to population is present at the county level and within the San Joaquin River region, we can estimate expected changes in population. Using the same data source that was used for Table 3.3-1 (U.S. Department of Commerce, 1998a), the 1998 population for the area encompassing San Joaquin, Stanislaus, Merced, and Fresno Counties is 1,928,868. From Table 3.3-2, total employment in 1998 can be calculated as 928,357 for the area encompassing all four counties. With this information, a population-to-employment ratio of 2.08 is calculated. If this ratio is applied to the total employment losses in Table 3.3-4, the expected impact is a loss of 250 persons (2.08 × 120). If this ratio is applied to the total employment losses in Table 3.3-5, the expected impact is a loss of 873 persons (2.08 × 420).

Impacts are presented for the San Joaquin River region as a whole. As with all impacts within a project area, the concentration of impacts to a smaller geographic area within the project area increases the relative impact, while a more uniform dispersion of impacts across the project area decreases the relative impact. While it is highly unlikely that all identified impacts would present themselves within a single water district or community, it is just as unlikely that a fully uniform dispersion of impacts across the entire project area would occur.

To the extent that income, employment, and population impacts are concentrated in a smaller geographic area, impacts to local tax bases and public services may also be exacerbated. While a lower population would lessen the strain on current public services (e.g., police and fire protection, schools, and health services) to meet the needs of their service area, the loss of income would cause a corresponding decrease in local tax revenues used to provide such public services.

More localized impacts than those identified in this analysis are almost certain to occur. However, it is also fair to say that localized impacts are already being felt in areas where the transfer of costs from areas that currently receive water at rates below the value of the water is shifted. Some of this shifting of impacts may, in fact, occur within the regional study area. While it is appropriate to analyze impacts at the regional level, it is also appropriate to recognize the potential for greater (both negative and positive) local impacts than are reflected in the analysis.

In addition, more localized employment impacts could also translate into a disproportionate impact on specific groups such as minority or rural populations. It is likely that impacts realized as a result of implementation of Alternative 2 would be greater than impacts realized as a result of implementation of Alternative 1.

CUMULATIVE IMPACTS

Overall, the cumulative impacts of renewing long-term contracts can be either beneficial or potentially adverse to socioeconomic resources. In the long-term, the renewal of long-term water service and repayment contracts is beneficial in light of past projects that have assisted growers in bringing marginal lands into irrigation and production, including the statutory authorities for long-term contract renewals listed at the start of Chapter 1.[1] Continued provision of water to agricultural and M&I users in the DMC Unit beneficially

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[1] Renewal of these contracts is being undertaken in pursuance generally of the Act of June 17, 1902 (32 Stat. 388), as amended and supplemented, including, but not limited to the Acts of August 26, 1937 (50 Stat. 844) as amended and supplemented, August 4, 1939 (53 Stat. 1187) as amended and supplemented, July 2, 1956 (70 Stat. 483); June 3, 1960 (74 Stat. 156); June 21, 1963 (77 Stat. 68); October 12, 1982 (96 Stat. 1262); and October 27, 1986 (100 Stat. 3050); and Title XXXIV of the CVPIA of October 30, 1992 (106 Stat. 4706).

supports the ongoing production of food, fiber, and other agricultural resources that sustain the regional, sub-regional, and local economies.

In contrast, some aspects of long-term contract renewal may have adverse short-term effects on the economic viability of some areas. In particular, increased water prices resulting from a tiered pricing structure under some subregions and water-year scenarios, when combined with reduced south-of-Delta water supply reliability resulting from a combination of CVP operational constraints on deliveries to the DMC Unit (as discussed in Chapter 1), could result in difficult choices regarding the affordability of agricultural production as an enterprise. However, to adequately place the effect of tiered pricing aspects of long-term contract renewals in perspective, one must also consider other factors that may arguably have equal or more bearing on the affordability of agricultural production. In particular, the direction of continued agricultural subsidy and price support programs for selected crops, weather patterns, and market prices for agricultural products affect such decisions. As stated in the introduction to this section, changes in the cost or availability of production inputs also play a large part in the ability of a producer to remain viable. Land, labor, seed, machinery, fertilizers, and water are all important, interrelated components in determining production decisions and enterprise profitability.